



International Civil Aviation Organization

**The First Meeting of the APANPIRG ATM Sub-Group
(ATM /SG/1)**

Bangkok, Thailand, 20 – 24 May 2013

Agenda Item 6: AOP, MET, AIM, SAR

**COLLABORATION TO SHARE
ELECTRONIC TERRAIN AND OBSTACLE DATA**

(Presented by Singapore)

SUMMARY

This paper presents case for States to collaborate to share electronic terrain and obstacle data for air navigation application. The sharing of cross-border information will enhance the safety and efficiency of aircraft operations and to realise the operational benefits of using electronic terrain and obstacle data.

This paper relates to –

Strategic Objectives:

A: *Safety* – Enhance global civil aviation safety

Global Plan Initiatives:

GPI-9 Situational awareness

GPI-12 Functional integration of ground systems with airborne systems

GPI-18 Aeronautical information

1. INTRODUCTION

1.1 Amendment 33 to ICAO Annex 15, published in July 2004, added a new Chapter 10 introducing SARPS for the provision of electronic Terrain and Obstacle Data (eTOD).

1.2 Among the many valuable applications, eTOD could be used in the following air navigation applications:

- a) ground proximity warning system with forward looking terrain avoidance function and minimum safe altitude warning (MSAW) system;
- b) aircraft operating limitations analysis;
- c) instrument procedure design (including circling procedure);
- d) advanced surface movement guidance and control system (A-SMGCS); and
- e) aeronautical chart production and on-board databases.

1.3 The data may also be used to determine contingency procedures for use in the event of an emergency during a missed approach or take-off; en-route “drift down” procedure, en-route

emergency landing location; and the height restriction or removal of obstacles that pose a hazard to air navigation. With the widespread use of Performance Based Navigation and complex airspace design to accommodate higher density of air traffic, there is a strong case for the use of eTOD to support a safe environment for flight operations.

2. DISCUSSION

Challenges to Acquire eTOD

2.1 Accurate, reliable, up-to-date terrain, obstacle and aerodrome mapping data are essential foundation for information-dependent air navigation applications. Such applications will enhance the safety and efficiency of aircraft operations in-flight, during approach / take-off, and while manoeuvring on the aerodrome surface. As it is a costly exercise to procure and maintain the terrain and obstacle data, careful consideration is needed to provide eTOD, especially for areas that require high data resolution

2.2 Another challenge faced by States may be the requirement to provide eTOD for Area 2 of an aerodrome which extends into the territory of another State. In such cases, there may be issues associated with cross-border provision and acquisition of data for the overlapped areas.

Opportunities to Collaborate in Sharing of eTOD

2.3 The obligation to make eTOD available rest with the State in which the aerodrome is located, as is currently the case with regards to the publication of data in the AIP. Consideration should be given to ensure that other States are notified of the data if the obstacle affects an aerodrome in another State, and vice versa.

2.4 Such challenges provide an opportunity for States to collaborate and share eTOD and other relevant aeronautical information. Such collaboration could be effected through an established agreement among the collaborative parties to promote harmonisation in the terrain and obstacle data, especially for areas that extends into the jurisdiction of another State. Such collaboration not only achieves a high level of harmonisation in respect to the data published but will also helps to reduce the cost associated with acquiring eTOD and upkeeping the electronic database.

2.5 Sharing of eTOD is also in line with ICAO's Annex 15 recommendations for States concerned to make arrangements to share Area 2 electronic terrain and obstacle data where necessary. (ICAO Annex 15, Chapter 10, paragraph 10.1.10 refers). Such collaboration will ensure data consistency, accuracy and reliability; all of which are necessary to ensure a safe environment for flight operations.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note ICAO's Annex 15 recommendation for States to share Area 2 eTOD where necessary;
- b) explore areas where collaboration between States to acquire eTOD can yield benefits to enhance flight safety and efficiency; and
- c) discuss any relevant matters as appropriate.

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